

REMARKS

The present application (a national phase filing of PCT/FI2003/000602) was filed on February 8, 2005 with a preliminary amendment canceling claims 1-33 and adding claims 34-67.

In the outstanding Office Action dated June 29, 2007, the Examiner: (i) rejected claims 34-42 and 52-67 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,227,656 (hereinafter “Timlin”); (ii) rejected claim 43 under 35 U.S.C. §103(a) as being unpatentable over Timlin in view of U.S. Patent No. 5,786,597 (hereinafter Lingren); (iii) rejected claims 44 and 45 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 20020153492 (hereinafter Sekine) in view of Timlin; and (iv) rejected claims 46-51 under 35 U.S.C. §103(a) as being unpatentable over Sekine in view of Timlin further in view of Lingren.

In this response, Applicants: (i) amend claims 34, 44-46, 48, 52, 63, 66 and 67; (ii) add new claim 68; and (iii) respectfully traverse the various rejections for at least the following reasons.

With regard to the §102 rejection, Applicants initially note that MPEP §2131 specifies that a given claim is anticipated “only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, MPEP §2131 indicates that the cited reference must show the “identical invention . . . in as complete detail as is contained in the . . . claim,” citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Applicants respectfully traverse the §102(b) rejection on the ground that the Timlin reference fails to teach or suggest each and every limitation of claims as alleged.

Applicants illustratively point out that the present invention describes a number of embodiments, specifically five embodiments with reference to each of Figures 2 to 6. A common feature of the embodiments, which can be understood with reference to Figure 2c, is that the photodiode device is formed of a plurality of substrates (42) having a plurality of anodes (26) at one surface thereof and a plurality of cathodes (23) at a further surface thereof. In each photodiode device, a bulk substrate clearly is maintained between the anode and cathode regions.

Applicants consider that this structure is conveyed by the independent claims as originally filed and considered by the Examiner. These claims, for example with reference to independent claims 34, define a plurality of anodes formed at first surfaces of a plurality of substrates, and a plurality of cathodes formed at second surfaces of a plurality of substrates. Thus, there is clearly defined a plurality of substrates with anodes and cathodes formed at respective first and second surfaces thereof.

Nevertheless, Applicants have now further amended the independent claims so as to emphasize the particular structure as discussed hereinabove. Thus, there is now positively defined, for example in claim 34, a plurality of substrates, and further defined the anodes and cathodes formed in the respective surfaces of such substrates. There is then further defined that a bulk of a substrate is disposed between each corresponding anode and cathode. This unambiguously defines a structure of the photodiodes corresponding to the structure of Figure 2c, which structure is also illustrated in each of the further embodiments of Figures 3 to 6.

Applicants further submit that such a structure, as now clearly defined by the clarified independent claims, is not disclosed by Timlin.

Timlin discloses an arrangement (see Figure 7 for example) in which there is formed a plurality of P-N junctions (P-type region 62 and N-type region 63). The P-type regions are formed in a surface of a substrate 71 (see Figure 4), and the substrate is then etched and thinned back (see Figure 6), and then patterned (see Figure 7), to form the plurality of P-N junction regions.

The N-type regions 63 are not formed in the substrate, but rather are what is left after the substrate has been removed. There is not disclosed in Figure 7 of Timlin elements which can correspond to a substrate. There is shown a P-type region 62 and a N-type region 63. There is not shown any substrate disposed between the anode and cathode region of each "island."

The embodiments of Figures 2 and 3 of the application disclose features which offer distinctions over the prior art of Timlin. These features are defined in independent claim 52, as amended, and newly added claim 68.

With reference to Figures 2b and 2c, it can be seen that a connector interface (generally denoted by reference numeral 35) is provided, having a plurality of contacts which electrically

connect to the active region 22 which forms the plurality of cathodes in the photodiode array. Following the formation of the connector interface, the overall substrate is divided in order to provide the plurality of substrates. The provision of the connector interface 35 provides the mechanical stability to allow the separation of the individual photodiode elements.

This contrasts with the arrangement of Timlin, where a “window” (reference numeral 57 in Figure 4) is formed over the surface of the device before creating the “islands” comprising the individual photodiodes.

Thus, the features of independent claim 52 are distinguished over Timlin by the limitation of providing the connector interface before dividing the substrate. This feature is not disclosed by Timlin and offers a further distinction.

Newly filed independent claim 68 defines the intermediate structure obtained by the method of claim 52, as shown, for example, in Figure 2c of the patent application.

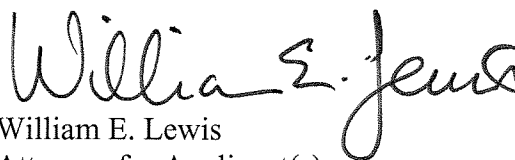
For the above reasons, it is submitted that the independent claims of the application are all distinct over the prior art Timlin. All the Examiner’s rejections of the independent claims are based on Timlin, and as distinctions over this prior art reference are established, all the rejections are overcome.

All of the dependent claims are allowable for at least the reasons identified above with regard to the independent claims. Furthermore, one or more of the dependent claims are also believed to define separately-patentable subject matter over the cited art.

Regarding the §103 rejections, Applicants assert that the Sekine and Lingren references fail to remedy the deficiencies described above with regard to Timlin. Also, it is respectfully asserted that Timlin, Sekine and/or Lingren are not necessarily properly combinable with one another.

In view of the above, Applicants believe that claims 34-68 are in condition for allowance, and respectfully request withdrawal of the §102(b) and §103(a) rejections.

Respectfully submitted,

A handwritten signature in black ink that reads "William E. Lewis". The signature is written in a cursive style with a large, stylized "W" and "L".

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